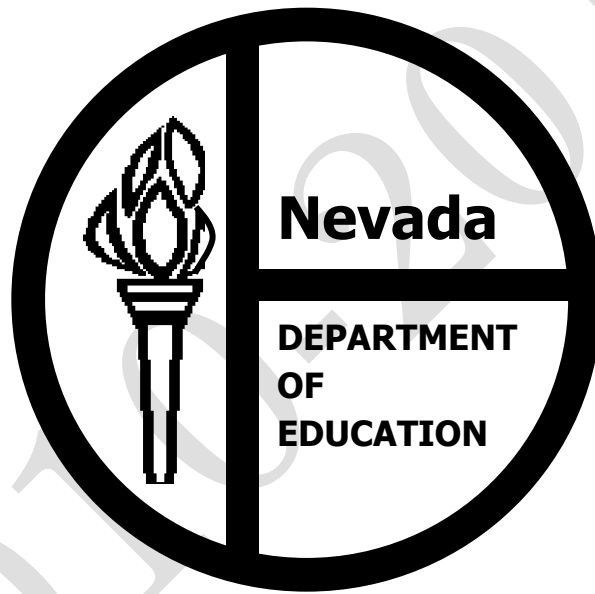


***2010-2011***  
***Alternative High School***  
***Proficiency Examination in Science***

**Test Administration Manual**  
**Parent & Student Guide**



Nevada Department of Education

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## ADMINISTRATIVE GUIDELINES for the ALTERNATIVE SCIENCE ASSESSMENT

### PURPOSE:

The Nevada Department of Education is required by state regulation to create an alternative science assessment for High School students failing the standard NHSPE science assessment. Students must meet certain eligibility requirements in order to elect to take the alternative assessment. Participation in the Alternative Science Assessment does **NOT** automatically guarantee passage. The rigor demanded is equal for both the alternative and the standard assessment. School administrators and teachers should not consider this assessment opportunity easier than regular HSPE Science assessments. The Department of Education *strongly recommends* that students continue taking the traditional HSPE Science examination that is administered throughout the school year. Students are allowed to take advantage of the alternative Science assessment only ONCE during their senior year.

In order for students to exercise the option to attempt the Alternative Science Assessment they **must have failed the HSPE science assessment at least 2 times prior to their 12<sup>th</sup> grade year** and in addition they must meet the following eligibility criteria by the **end of the first semester of their current senior year**.

For the 2009-2010 academic year, in order for a student to exercise the option to attempt the Alternative Science Assessment they must:

- Have passed the HSPE reading and math assessments;
- Have an unweighted GPA of at least 2.75; and
- Have earned sufficient credits to be on schedule to graduate in the class of 2010.

A pupil who meets the eligibility criteria above, may demonstrate proficiency in science by submitting to the Department of Education a portfolio of work prepared by the pupil. The regular HSPE science assessment is a measurement of a pupil's science knowledge and skills across the full range of the Nevada Science Standards: Physical Science, Life Science, Earth/Space Science and the Nature of Science. The portfolio of work submitted by the pupil to meet the alternative science assessment must also demonstrate the pupil's proficiency in the academic standards for science including life science, physical science, Earth Science, environmental science, and the nature of science.

The portfolio of work submitted by the pupil to demonstrate their proficiency in science must include:

1. *One complete experimental design; and*
2. *One work sample requiring analysis and interpretation of a data set++; and*
3. *One additional work sample demonstrating the pupil's science content knowledge and abilities to use and apply basic and integrated science process skills, including, without limitation:*
  - a. *science project or laboratory report based on student generated data; or*
  - b. *completed science fair project, consolidated into one document; or*
  - c. *any other sample of work demonstrating the pupil's science knowledge, abilities, and skills.*

**++Data sets for analysis and interpretation will be developed by the Nevada Department of Education and made available by the school to all students choosing to attempt the Alternative Science Assessment.**

#### **SUBMISSION:**

- Incomplete packets will not be scored.
- Completed student packets must be submitted in the following order:
  - District Header Sheet
  - Checklist for the Alternative Science Proficiency Assessment
  - Student Information Form
  - Hand Bubbled 12<sup>th</sup> Grade HSPE Answer Document (same as 12<sup>th</sup> grade answer document used for the standard science assessment)
  - Science Submission Form for the Experimental Design
  - Completed Experimental Design
  - Science Submission form for the Data Analysis and Interpretation with Raw Data Set attached
  - Completed Data Analysis and Interpretation
  - Science Submission form for the Other Work Sample
  - Description of Other Work Sample being submitted
  - Completed Other Work Sample

## REQUIREMENTS

- A Science Submission Form with signed certifications is required to be completed for each work sample.
- Each completed student packet must be clipped together or placed in its own envelope/folder.
- The work submitted to be scored must be clean and free of all comments, grades, and corrections.
- No previously scored classroom work or tests will be accepted.
- **All work submitted becomes the property of the State and will not be returned.**

## NON-PERMISSIBLE SUBMISSIONS:

- Worksheets
- Group work
- Research/ technical/informational pieces without citations
- Copied research/technical/informational text, e.g., job/program descriptions, with no accompanying student created work
- Work completed by someone other than the student submitting his/her work

## WORK:

- Work must be completed by the student while enrolled in the current school district.
- Work must be certified by a teacher or other licensed personnel at the school where the pupil is enrolled.
- Work samples submitted must demonstrate science content knowledge across the full range of content contained in the standards. The intended content area must be indicated on the Science Submission form, for each work sample.
- Typed final submissions are preferable.

## PERMISSIBLE ASSISTANCE:

- Provide only general suggestions, e.g., "have you addressed all the areas identified in the scoring guides?", "do your results help answer the original question?", "your conclusions need to be supported by the data from your analysis or experiment", "the methods aren't specific enough."
- Provide only general guidance in the laboratory activity. Assistance should be limited to provision of laboratory equipment or

calculators, required materials such as chemicals, and laboratory safety equipment.

- Encourage students to use the scoring guides and rubrics to insure that all required evidence and explanations are included in their responses.
- Encourage students to read the finished work to himself/herself or to another student out loud to aid in the revision and editing processes.

### **NON PERMISSIBLE ASSISTANCE:**

- Specific suggestions related to the design, organization, data collection, interpretation, or analysis in the experimental design.
- Specific suggestions related to tools or methods used for data analysis.
- Specific guidance on possible questions related to data analysis, or related to interpretation of data related to original research question(s).
- Specific assistance in the use of laboratory equipment (not required for student safety).
- Writing or rewriting any portion of any of the work samples for the student.
- Any assistance by individuals (parents, siblings, friends) beyond that outlined under Permissible Assistance.

### **SCORING:**

- Each work submission will be scored by two different readers. The two scores for the submission will be averaged to get a final score for each submission.
- The final score will be a combined total score (cumulative score) of the three submissions.
- Scorers must have extensive knowledge of high school curriculum and expectations.
- Scorers will be trained to evaluate the alternative assessment items.
- Submitted pieces will be scored using the rubric aligned with the type of submission indicated on the "Science Submission Form", i.e., a submission designated as experimental design will be scored as an experimental design. Submissions that do not represent the designated category may receive lower scores.
- The state reserves the right to submit papers to a plagiarism website, e.g., turnitin.com. If cheating has occurred, the student automatically fails the alternative assessment.

## **SUBMISSION DUE DATES:**

**All students wishing to attempt the ALTERNATIVE SCIENCE ASSESSMENT, for the 2010-2011 academic year, should consult their District Testing Calendar for the date by which all materials must be received.**

**Violation of State or District test security procedures is strictly prohibited by state law and is subject to prosecution pursuant to NRS 391.330.**

## DISTRICT HEADER SHEET: ALTERNATIVE SCIENCE PROFICIENCY ASSESSMENT

To be completed by District Test Director

Student Name \_\_\_\_\_

School \_\_\_\_\_

District \_\_\_\_\_

Date \_\_\_\_\_

### ELIGIBILITY CRITERIA

Student is a senior and credit ready to graduate. YES ☐ NO\* ☐

Student has failed the standard science assessment 2 times. YES ☐ NO\* ☐

Student has an unweighted GPA of at least 2.75 by the end of first semester of senior year. YES ☐ NO\* ☐

Student has passed the reading **and** math portions of the proficiency exam by the end of first semester of his/her senior year. YES ☐ NO\* ☐

(\* Any NO answer disqualifies a student from participation in the alternate science assessment.)

### The packet for each student includes:

- \_\_\_ Checklist for the Alternative Science Proficiency Assessment
- \_\_\_ Student Information Form
- \_\_\_ Hand Bubbled 12<sup>th</sup> Grade HSPE Answer Document
- \_\_\_ Science Submission Form for the Experimental Design
- \_\_\_ Completed Experimental Design
- \_\_\_ Science Submission form for the Data Analysis and Interpretation with Raw Data Set attached
- \_\_\_ Completed Data Analysis and Interpretation
- \_\_\_ Science Submission form for the Other Work Sample
- \_\_\_ Description of Other Work Sample being submitted
- \_\_\_ Completed Other Work Sample
- \_\_\_ All three content areas included in submission:
  - \_\_\_ Physical Science
  - \_\_\_ Life Science
  - \_\_\_ Earth/Space Science

## CHECKLIST for the ALTERNATIVE SCIENCE PROFICIENCY ASSESSMENT

To be completed by School Site Administrator

Student Name \_\_\_\_\_ Date \_\_\_\_\_

School \_\_\_\_\_ District \_\_\_\_\_

### ASSESSMENT CHECKLIST

Student Packet Order:

\_\_\_\_ Student Information Form

\_\_\_\_ Hand Bubbled 12<sup>th</sup> grade answer document (same as 12<sup>th</sup> grade answer document used for the standard HSPE science assessment)

#### FIRST PIECE- design for a scientific experiment

\_\_\_\_ Work Sample Submission Form\* \*

\_\_\_\_ Complete experimental design

#### SECOND PIECE-data analysis and interpretation

\_\_\_\_ Work Sample Submission Form\*\*

\_\_\_\_ Raw Data set attached

\_\_\_\_ Data analysis and interpretation

#### THIRD PIECE- other work sample

\_\_\_\_ Work Sample Submission Form\* \*

\_\_\_\_ Description of work being submitted

\_\_\_\_ Clean final copy

\*\* Please circle the content area for each submission. All three content areas are required to be addressed.

Work Sample	Content Area		
Exp Design	Physical Science	Life Science	Earth/Space Science
Data Analysis	Physical Science	Life Science	Earth/Space Science
Other	Physical Science	Life Science	Earth/Space Science

**Forms must be completed with no blanks or NA in order to be scored.**

**Violation of State or District test security procedures is strictly prohibited by state law and is subject to prosecution pursuant to NRS 391.330.**



## Student Information Form

Student	Student ID	School / District										
Teacher(s)/ Licensed Personnel												
<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">Eligibility Requirements Met?</td> <td style="width: 15%;">2.75 GPA</td> <td style="width: 15%;">YES/ NO</td> <td style="width: 33%;">Passed HSPE Reading &amp; Math</td> <td style="width: 5%;">YES/NO</td> </tr> <tr> <td></td> <td>Credit Sufficient</td> <td>YES/NO</td> <td>Failed HSPE Science 2 times</td> <td>YES/NO</td> </tr> </table>			Eligibility Requirements Met?	2.75 GPA	YES/ NO	Passed HSPE Reading & Math	YES/NO		Credit Sufficient	YES/NO	Failed HSPE Science 2 times	YES/NO
Eligibility Requirements Met?	2.75 GPA	YES/ NO	Passed HSPE Reading & Math	YES/NO								
	Credit Sufficient	YES/NO	Failed HSPE Science 2 times	YES/NO								
Sign-off Forms Completed? <span style="margin-left: 100px;"><input type="checkbox"/> Yes</span> <span style="margin-left: 100px;"><input type="checkbox"/> No</span>												

*With this signature, I confirm that the work in this student collection has been produced under the direction of faculty/staff in my building.*

*Signature of Principal:* \_\_\_\_\_ *Date:* \_\_\_\_\_

Science Submission Form: Experimental Design		
Student	Student ID	School / District
Submission Title:		
Type of Submission:      Physical Science ____    Life Science ____    Earth/Space Science ____		
<b><i>NOTE: All three content areas must be included within the completed submission</i></b>		
All materials submitted become property of the Nevada Department of Education, and will not be returned.		

<b>STUDENT</b> Name: _____  <i>I affirm that this is my original work.</i>  Signature: _____  Date: _____
--

<b>TEACHER/ LICENSED PERSONNEL</b> Name: _____  <i>I affirm that this is the student's original work.</i>  Signature: _____  Date: _____
---

Science Submission Form: Data Analysis and Interpretation		
Student	Student ID	School / District
Submission Title:		
Type of Submission:      Physical Science ____    Life Science ____    Earth/Space Science ____		
<b><i>NOTE: All three content areas must be included within the completed submission</i></b>		
Data set attached <input type="checkbox"/> YES (required)		
All materials submitted become property of the Nevada Department of Education, and will not be returned.		

<b>STUDENT</b> Name: _____  <i>I affirm that this is my original work.</i>  Signature: _____  Date: _____
--

<b>TEACHER/LICENSED PERSONNEL</b> Name: _____  <i>I affirm that this is the student's original work.</i>  Signature: _____  Date: _____
--

Science Submission Form: Other Work Sample		
Student	Student ID	School / District
Submission Title:		
Description of Other Work Sample: ___ Project Report ___ Science Fair Project ___ Research Paper ___ Experimental Design ___ Data Analysis & Interpretation ___ Other _____		
Type of Submission:     Physical Science ___     Life Science ___     Earth/Space Science ___		
<b><i>NOTE: All three content areas must be included within the completed submission</i></b>		
All materials submitted become property of the Nevada Department of Education, and will not be returned.		

<b>STUDENT</b> Name: _____  <i>I affirm that this is my original work.</i>  Signature: _____  Date: _____
--

<b>TEACHER/LICENSED PERSONNEL</b> Name: _____  <i>I affirm that this is the student's original work.</i>  Signature: _____  Date: _____
--

## Alternative HSPE Science Assessment

### Guidelines for Experimental Design

**Although not an absolute requirement, students are strongly encouraged to submit an experimental design for an investigation that they have personally designed, planned, and conducted.**

Areas to address in each section of the experimental design

Please respond in paragraph form.

1. Introduction (40 points)

What is your research question?

What background information did you have (would you need) to design the investigation?

What was your hypothesis?

2. Methods (60 points)

What did you do to test your hypothesis: to answer your original question?

What are the variables of your experiment (dependent and independent)?

Which of your variables are you manipulating and why?

What exactly did you (will you) measure or count and what comparison(s) are you making?

How did you (will you) make measurements?

Describe any appropriate statistical tests you would use to test your hypothesis.

3. Results (40 points)

Describe the results in words.

Describe your results using as many figures (graphs or tables) as you need to display your data effectively.

4. Discussion (50 points)

Did you accept or reject your initial hypothesis?

Were you able to answer your original question?

How do your results fit with what you already knew, or have learned from other sources?

What things would you do differently if you could do this experiment again?

What are possible sources of error that may have affected your results?

How could your experiment be important in the application of this information to real world problems?

5. References (10 points)

Cited references using approved APA or MLA format. (minimum of 3)

Total 200 points

## Rubric for Experimental Design

Topic	Complete and relevant to topic	Mostly complete and related to topic	Incomplete and/or not relevant to topic	Not relevant or no attempt
<b>INTRODUCTION – 40 points</b>				
Research question	15-20	6-14	1-6	0
Background information	8-10	3-7	1-2	0
Testable hypothesis	8-10	3-7	1-2	0
<b>METHODS – 60 points</b>				
What did you do to test your hypothesis? Experimental methods	8-10	3-7	1-2	0
What are the variables in your experiment?	8-10	3-7	1-2	0
Which of the variables did you manipulate?	8-10	3-7	1-2	0
What did you measure or count and what comparisons are you making?	8-10	3-7	1-2	0
How will you make measurements?	8-10	3-7	1-2	0
Appropriate use of statistical tests	8-10	3-7	1-2	0
<b>RESULTS – 40 points</b>				
Written description	15-20	6-14	1-6	0

Figures, graphs, tables	15-20	6-14	1-6	0
<b>DISCUSSION – 50 POINTS</b>				
Accept or reject hypothesis	5	3-4	1-2	0
Answer original research question	12-15	7-11	1-6	0
How do your results fit with previous knowledge?	8-10	3-7	1-2	0
What would you do differently	5	3-4	1-2	0
Sources of error in experiment	5	3-4	1-2	0
How does your experiment relate to real world?	8-10	3-7	1-2	0
<b>REFERENCES 10 Points</b>				
References	8-10	3-7	1-2	0

**Total** \_\_\_\_\_

## Alternative HSPE Science Assessment

### Guidelines for Data Analysis & Interpretation

**Data sets for analysis and interpretation will be developed by the Nevada Department of Education and made available by the school to all students choosing to attempt the Alternative Science Assessment. Do not use any other data**

Items to be addressed for this submission:

#### Preparation (50 points)

1. Describe the data set (qualitative and quantitative description). Should be written in a paragraph.
2. What research question(s) are being investigated in the analysis?
3. What analysis is planned?
4. How will the results of the analysis be presented
5. What if any quantitative analysis will be used in the analysis?

#### Data Analysis (50 points)

1. How did you analyze the data? **Show your work and explain your process.**
2. What are the results/outputs of your analysis?
  - a. Graphs, tables, charts
  - b. Written description of your results

#### Interpretation (50 points)

1. What is the answer to your research question(s)?
2. How sure are you of your answer? (is it supported statistically?) **Explain**
3. What could you do to increase your confidence in the answer?
4. Explain how the data set could be used to investigate other research questions?
5. How do the results of your analysis add to your understanding of real world problems in the content area?

Content Question: (50 points) Provide an explanation regarding how the results of your analysis add to your overall understanding of the content area addressed by the data set.

Total \_\_\_\_\_ / 200



# RUBRIC FOR DATA ANALYSIS AND INTERPRETATION

Topic	Complete and relevant to topic	Mostly complete and related to topic	Incomplete and/or not relevant to topic	Not relevant or no attempt
<b>PREPARATION – 50 POINTS</b>				
Description of data set	8-10	4-7	1-3	0
Research question(s)	8-10	4-7	1-3	0
What analysis is planned	8-10	4-7	1-3	0
How will results be presented	8-10	4-7	1-3	0
What quantitative analysis will be used?	8-10	4-7	1-3	0
<b>DATA ANALYSIS -50 POINTS</b>				
How did you analyze the data?	20-25	11-19	1-10	0
Graphs, charts, tables	8-10	4-7	1-3	0
Written results	12-15	7-11	1-6	0
<b>INTERPRETATION-50 POINTS</b>				
What is the answer to your question/ hypothesis?	8-10	4-7	1-3	0
How sure are you of the results?	8-10	4-7	1-3	0
How could you increase your confidence in the answer?	8-10	4-7	1-3	0
How could the data set be used for different analyses?	8-10	4-7	1-3	0
How do your results add to your understanding of the content area?	8-10	4-7	1-3	0

ANSWER TO THE CONTENT QUESTION \_\_\_\_\_ (50 POINTS)

Total \_\_\_\_\_ / 200

### Alternative HSPE Science Assessment

Guidelines for “Other work sample”: **After you select an “Other work sample” for submission, you must explain why the sample demonstrates proficiency in science by addressing the items below. Be sure to include your “other work sample” and a section that addresses each of the items below in your submission.**

Items to be addressed for this work sample:

1. Describe the work sample (e.g., project report, experimental design, research paper, etc.)\*\*\* **Include the work sample in the packet.**
2. What content strand does this work sample address: Earth/Space Science, Life Science, or Physical Science?
3. What is the scientific (research) question that is being addressed in the work sample?
4. What methods did you use?
5. How did you collect your data?
6. How were the data analyzed?
7. What are your results?
8. How do the results help you support or reject your answer to the research question?
9. How do your results add to your understanding of this content area?
10. How did you decide on the format for presentation?
11. How does the work presented in this sample demonstrate your proficiency in science content knowledge and science process skills?

200 points

## Explanation of Other Science Work Sample

Student:	
Teacher:	Course:
Brief explanation of specific science task.	

2010-2011

Nevada Alternative HSPE Science Assessment  
Other work sample Scoring Rubric

Category	Scoring Criteria	Complete and clearly related to topic	Mostly complete and at least partly related to topic	Incomplete and/or only marginally related to topic	Incomplete, unrelated, or no attempt
description 10 points	Section includes adequate description of work sample	8-10	5-8	2-4	0-1
Content strand 5 points	Content strand addressed by work sample clearly identified	5	3-4	1-2	0
Research question 40 points	Work sample provides a clear description of the purpose, scientific question, or research question addressed.	30-40	16-30	4-15	0-3
Methods 80 points	Methods used to conduct the work are clearly presented in student's own words (not cut & paste)	30-40	16-30	4-15	0-3
	Methods for data collection are clear	11-15	6-10	2-5	0-1
	Methods for data analysis are clearly defined	11-15	6-10	2-5	0-1
	Reference to scientific literature	8-10	5-8	2-4	0-1
Results 40 points	Results of the student's work are clearly identified and described.	15-20	8-19	2-7	0-1
	Discussion of how results support answer to research question	15-20	8-19	2-7	0-1
Format 5 points	Work sample provides a clear statement regarding the selection of the format for presentation	5	3-4	1-2	0-1
Reflection 20	Work sample provides a description in student's words regarding how the selected work sample demonstrates proficiency in the selected content area	15-20	8-19	2-7	0-1
Score	Total points				

Total points \_\_\_\_\_ / 200